

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

<b>Inventors:</b>	<b>John Stephen Dunfield et al.</b>	<b>Examiner:</b>	<b>Saira Raza</b>
<b>Application No:</b>	<b>10/765,402</b>	<b>Group Art Unit:</b>	<b>1711</b>
<b>Filing Date:</b>	<b>January 27, 2004</b>	<b>Confirmation No:</b>	<b>2192</b>
<b>Title: Method of Making Microcapsules Utilizing A Fluid Ejector</b>			

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**APPEAL BRIEF UNDER 37 CFR §41.37**

**APPELLANTS'/APPLICANTS' OPENING BRIEF ON APPEAL**

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Sir:

This Brief is submitted in support of the Appeal in the above-identified application.

**1. REAL PARTY IN INTEREST**

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned

affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

## **2. RELATED APPEALS AND INTERFERENCES**

Appellants, Appellants' legal representative, and Assignee are unaware of any other appeals or interferences which would directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## **3. STATUS OF THE CLAIMS**

Claims 1-72 are pending in the application. Claims 31, 35-38, 42-45, 58, 62-65, and 68-72 are withdrawn from consideration. Claims 1-30, 32-34, 39-41, 46-57, 59-61, and 66-67 stand finally rejected by the Examiner and are being appealed herewith.

## **4. STATUS OF AMENDMENTS**

A Final Response was filed on 31 July 2006, and was entered by the Examiner in the Advisory Action of 15 August 2006. No amendments have been made subsequent to the Final Office action dated 31 July 2006.

## **5. SUMMARY OF CLAIMED SUBJECT MATTER**

Appellants invented a method of making microcapsules utilizing a fluid ejection device to eject drops of a precise volume of a fluid, that includes a core material component, into a second fluid and generates the microcapsule in the second fluid with the core material component encapsulated within the micro capsule.<sup>1</sup>

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<sup>1</sup> Page 3, paragraph 10, lines 19-24 of the specification.

A. Independent claim 1

Independent claim 1 recites a method of making a microcapsule, comprising: activating a fluid ejector<sup>2</sup> 390 at a frequency greater than 10 kilohertz,<sup>3</sup> wherein each activation of said fluid ejector generates essentially a drop,<sup>4</sup> said fluid ejector fluidically coupled to a first fluid including a core component;<sup>5</sup> ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume;<sup>6</sup> and generating a microcapsule in said second fluid for each drop of said first fluid ejected, wherein said microcapsule includes said core component.<sup>7</sup>

B. Independent claim 46

Independent claim 46 recites a method of making a microcapsule, comprising: activating n times a drop-on-demand fluid ejector,<sup>8</sup> said fluid ejector fluidically coupled to a first fluid including a core component,<sup>9</sup> said fluid ejector operated at a frequency greater than 10 kilohertz<sup>10</sup>, wherein each activation generates essentially a fluid drop of said first fluid;<sup>11</sup> ejecting essentially n drops of said first fluid into a second fluid<sup>12</sup> producing a distribution of n fluid drop volumes, wherein each drop volume of said n fluid drops is within about 10 percent of a specified drop volume;<sup>13</sup> and generating a microcapsule in said second fluid, wherein said microcapsule includes said core component.<sup>14</sup>

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<sup>2</sup> Page 8, paragraph 16, lines 11-26, Fig. 3 of the specification.

<sup>3</sup> Page 5, paragraph 13, line 29 to page 6, line 4 of the specification.

<sup>4</sup> Page 5, paragraph 13, lines 21-29, Fig. 1a of the specification.

<sup>5</sup> Page 4, paragraph 12, lines 19-23, Fig. 1a of the specification.

<sup>6</sup> Page 9, paragraph 17, lines 8-10, Fig. 3 of the specification.

<sup>7</sup> Page 9, paragraph 18, Fig. 3 of the specification.

<sup>8</sup> Page 5, paragraph 13, lines 21-29, Fig. 1a, and page 3, paragraph 10, line 24 of the specification.

<sup>9</sup> Page 4, paragraph 12, lines 19-23, Fig. 1a of the specification.

<sup>10</sup> Page 5, paragraph 13, line 29 to page 6, line 4 of the specification.

<sup>11</sup> Page 5, paragraph 13, lines 21-29, Fig. 1a of the specification.

<sup>12</sup> Page 5, paragraph 13, lines 21-29 Fig. 1a, and page 9, paragraph 17, lines 8-10, Fig. 3 of the specification.

<sup>13</sup> Page 6 paragraph 14, Figs. 1b and 1c of the specification.

<sup>14</sup> Page 9, paragraph 18, Fig. 3 of the specification.

C. Independent claim 47

Independent claim 47 recites a method of using a drop on demand fluid ejection device, comprising: energizing the drop on demand fluid ejection device;<sup>15</sup> ejecting essentially a drop of a first fluid including a microcapsule forming core component into a second fluid;<sup>16</sup> and generating a microcapsule in said second fluid, wherein said microcapsule includes said microcapsule forming core component.<sup>17</sup>

**6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

A. Claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49 are not anticipated by Loughman (WO 99/38535, "Loughman").

B The combination of Loughman in view of Boucher (U.S. Patent No. 6,641,254, "Boucher") does not disclose, teach, or suggest all of the claim limitations of claims 3, 9-10, and 48.

C The combination of Loughman and Examiner's remarks does not disclose, teach, or suggest all of the claim limitations of 15-16, 19-28, and 50-55.

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<sup>15</sup> Page 5, paragraph 13, lines 21-29, Fig. 1a, and page 3, paragraph 10, line 24 of the specification.

<sup>16</sup> Page 9, paragraph 17, lines 8-10, Fig. 3 of the specification.

<sup>17</sup> Page 9, paragraph 18, Fig. 3 of the specification.

## **7. ARGUMENT**

### **A. Claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49 are not anticipated by Loughman (WO 99/38535, "Loughman").**

Appellants assert that the rejection of claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49 under 35 U.S.C. §102(b) as being anticipated by Loughman (WO 99/38535, "Loughman") is improper.

#### **i. Prima Facie case of Anticipation**

In order for the Examiner to establish a *prima facie* case of anticipation there must be a single reference that teaches each of the claimed elements (arranged as in the claim) expressly or inherently as interpreted by one of ordinary skill in the art.<sup>18</sup> Although the regulation does not directly address the requirements of anticipation 37 C.F.R. §1.56(b)(2)(ii) states a "prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability." In particular, an anticipation analysis must be conducted on a limitation by limitation basis, with specific fact findings for each contested limitation and satisfactory explanations for such findings.<sup>19</sup> Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention arranged as in the

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<sup>18</sup> MPEP 2131, ("A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.). In addition, the identical invention must be shown in as complete detail as is contained in the . . . claim. MPEP 2131 citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1990).

<sup>19</sup> *Getcher v. Davidson*, 116 F.3d 1454, 43 USPQ2d 1030, 1035 (Fed. Cir. 1997).

claim.<sup>20</sup> There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention.<sup>21</sup> Thus, Appellants assert it is well settled that a claim is anticipated if, and only if, each and every limitation set forth in the claim can be found expressly or inherently in a single piece of prior art. Furthermore, it is also well settled that the burden of establishing a prima facie case of anticipation resides with the Patent and Trademark Office.<sup>22</sup>

Examiner's rejection of independent claim 1 as being anticipated by Loughman is based on the improper interpretation of 3 different elements/limitations found in Appellants' independent claim 1.

First, Examiner improperly gives the word "essentially" found in the claim limitation "essentially a drop," and unreasonably broad interpretation that appears to include any number of drops greater than two. The Examiner in the Final Office action, on page 2, continued to assert that Loughman discloses "a method for producing a microcapsule . . . comprising utilizing an ultrasonic atomizer where a dispersion of the first fluid . . . is ejected as microdroplets into a second fluid . . . The ultrasonic atomizer of Loughman functions as a fluid ejector . . . [wherein] each activation of the ultrasonic atomizer generates a drop (having a volume) . . . ." On page 12 of the Final Office action, in response to Appellants' response that each activation of an ultrasonic atomizer as disclosed in Loughman does not generate a drop but generates many drops, the Examiner asserts claim 1 states "essentially a drop," hence claim 1 does not exclude the generation of more than one drop. Examiner argues that each activation of Loughman's ultrasonic atomizer generates essentially a drop and hence it can clearly be considered as a drop on demand fluid ejector. Examiner stated Appellants provided no evidence to the contrary.

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<sup>20</sup> *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)).

<sup>21</sup> *Scripps Clinic & Research Found. v. Genentech Inc.*, 927 F.2d 1565, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991).

<sup>22</sup> *In re Skinner*, 2 USPQ2d 1788, 1788-89 (B.P.A.I. 1986).

In Appellants' response dated 31 July 2006 Appellants noted that such an interpretation of Loughman is an unreasonably broad interpretation of the term "essentially a drop," where Appellants noted that Examiner appears to be interpreting essentially as equivalent or synonymous with the term "plurality," that is also a term widely used in claims, which Appellants believe has a completely different meaning. Appellants assert that plurality should be interpreted in accordance with its ordinary meaning and when used in a claim "refers to two or more items, absent some indication to the contrary."<sup>23</sup> Appellants argued that a proper interpretation of "essentially a drop" is "about a drop," more than a drop in some cases but not many drops. In the advisory action dated August 15, 2006 Examiner stated "[c]learly, applicant agrees with examiner's interpretation that "essentially a drop" does not exclude generation of more than one drop. Appellants traverse Examiner's statement that Appellants agree with Examiner's interpretation and again state that Appellants continue to believe that "essentially a drop" is properly interpreted as "about a drop," i.e. more than a drop but not many drops. Appellants did not intend and do not consider such a description to mean any number of drops or many drops of a particular volume as Examiner appears to interpret Appellants' statement but rather meant the statement to be a simplified wording or rewording of what is disclosed in the specification in regards to the few secondary drops commonly encountered in thermal ejection drop on demand type fluid ejectors, since Appellants assumed that Examiner had read and understood Appellants' specification and therefore a simplified rewording might help to clarify for the Examiner, Examiner's misinterpretation of the word "essentially." Appellants note that in the specification Appellants describe how the term "essentially a drop" is used in describing Appellants' invention:

"[e]ach activation of a fluid ejector results in the ejection of a precise quantity of fluid in the form of essentially a fluid drop with the drop ejected substantially along fluid ejection axis 148. Each fluid drop may include

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<sup>23</sup> *Kustom Signals Inc. v. Applied Concepts Inc.*, 264 F.3d 1326, 60 USPQ2d 1135 (Fed. Cir. 2001), *cert denied*, 535 U.S. 986 (2002).

primary drop 146 as well as possible secondary drops 144. Both the generation and size of the secondary drops depends on various parameters such as the firing frequency of fluid ejector 126, the surface tension of the fluid being ejected, the size and shape of nozzle 142, and the size, shape, and location of fluid ejector 126 to nozzle 142. The number of times the fluid ejector is activated, in this embodiment, controls the number of drops ejected.<sup>24</sup>

Appellants believe that such a description and the claim language "essentially" should be interpreted to have a meaning similar to that of the word "about."<sup>25</sup> Further, the CCPA has observed that it would be impractical to require applicants to specify a particular number as a cutoff between the claimed invention and the prior art as long as the specification contains guidelines and examples that are sufficient to enable a person of ordinary skill in the art to draw the line between applicants invention and the prior art.<sup>26</sup>

In addition, Appellants note that Loughman in describing the use of an ultrasonic atomizer or nebulizer does not provide any detailed description of the operation of the ultrasonic atomizer or nebulizer and instead appears to rely on what is known in the art. In this regard Appellants assert that the plain ordinary meaning of "atomizer" is a device used to shoot out a fine spray.<sup>27</sup> Likewise the plain ordinary meaning of nebulize is to reduce (a liquid) to a fine spray,<sup>28</sup> and the plain ordinary meaning of spray is a cloud or mist of fine liquid particles.<sup>29</sup> Further, Appellants note that atomization is the "mechanical subdivision of a bulk liquid."<sup>30</sup> Spraying usually implies the production of coarse drops (100-1000 micrometers in diameter whereas nebulizing typically refers to the production of very fine drops under 10 micrometers

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<sup>24</sup> Page 5, paragraph 13, lines 21-29 in the specification.

<sup>25</sup> See, e.g. *Eiselstein v. Frank*, 52 F.3d 1035, 34 USPQ2d 1467 (Fed. Cir. 1995). Al

<sup>26</sup> *In re Marosi*, 710 F.2d. 799, 218 USPQ 289, 292 (Fed. Cir. 1983).

<sup>27</sup> See, e.g. Webster's New World Dictionary of the American Language, page 88 (2nd College Ed. David B. Guralnik, Editor in Chief, Simon and Schuster 1982).

<sup>28</sup> *Id* at 950.

<sup>29</sup> *Id* at 1378.

<sup>30</sup> See, e.g. Concise Encyclopedia of Science & Technology, page 193 (4th ed. Sybil P. Parker Editor in Chief, McGraw-Hill 1998).



in diameter.<sup>31</sup> Appellants note the practical application of atomization processes, requires that droplets be produced at some predetermined rate, that is, liquid must be supplied at some finite rate and *continuously converted into droplets*.<sup>32</sup> Clearly if atomization is a process that continuously converts a bulk liquid into droplets thousands if not a much larger number of drops would typically be generated upon activating an ultrasonic atomizer or nebulizer. Thus, based on the court's interpretation of the term "essentially" and the generally accepted plain ordinary meaning of atomizers, nebulizers, and sprayers as well as the commonly accepted operation of an atomizer or nebulizer Appellants believe that Examiner has given "essentially a drop" an unreasonably broad interpretation that is in contradistinction to what one of ordinary skill in the art would interpret for such claim language and for this reason alone the rejection of independent claims 1 and 46-47 is improper.

Second, independent claim 1 also includes the limitation "activating a fluid ejector at a frequency greater than 10 kilohertz." Appellants disagree with Examiner that Loughman discloses activating a fluid ejector at a frequency greater than 10 kilohertz. Appellants note that Loughman on page 9 line 34 to page 10 line 3 states the "nebulizer probe nebulizes at a frequency of 12 to 36 kHz . . . [where] [t]he relation between the frequency a probe can generate and its affect on a process of this invention is that a higher frequency allows the process to be able to handle more viscous solutions and also higher flow rates of the dispersion on the bound microparticles in an absorbable encasing polymer solution." Appellants believe that such a disclosure in Loughman does not anticipate Appellants' claimed invention since Loughman clearly activates the nebulizer and continuously operates it at a frequency of 12-36 kHz in contradistinction to Appellants claimed invention where Appellants activate a fluid ejector at a frequency greater than 10 kHz. Appellants assert that the description in Loughman is consistent with the operation of an ultrasonic nebulizer where once the nebulizer is activated it operates at a predetermined frequency creating a spray or a very large number of liquid drops

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<sup>31</sup> *Id.*

<sup>32</sup> *Id.* at 194 (Emphasis added).

after activation and is different from Appellants claim language of activating a fluid ejector above a given frequency. This continuous operation once activated is further highlighted by Loughman on page 10 lines 24-27 where Loughman discloses the "dispersion is fed at a flow rate of between 1 ml/min and 10 ml/min to an ultrasonic atomization nozzle with variable frequency - this frequency can be altered from 12 kHz to 36 kHz - higher frequency allows higher flow rates while maintaining particle characteristics." Thus, Appellants argue that the claim limitation "activating a fluid ejector at a frequency greater than 10 kilohertz," is clearly and unambiguously not disclosed in Loughman. Therefore, Loughman cannot anticipate Appellants' claimed invention as recited in independent claim 1 and similarly recited in independent claim 46 and therefore for this reason alone the rejection of independent claims 1 and 46 is improper.

Third, independent claim 1 also includes the limitation "generating a microcapsule in said second fluid for each drop of said first fluid ejected, wherein said microcapsule includes said core component." Appellants disagree with Examiner that Loughman discloses generating a microcapsule in said second fluid for each drop of said first fluid ejected. Appellants note that Loughman discloses, "[b]ound microparticles are encased with an absorbable encasing copolymer of lactide and glycolide using coagulation of solid microparticles encased in a polymer solution and delivered through an ultrasonic atomizer (nebulizer) into a liquid medium that is a non-solvent for the encasing polymer, but where the liquid medium non-solvent is capable of extracting the solvent of the encasing solution about the encased solid microparticles."<sup>33</sup> Loughman also discloses the "number of the original bound microparticles in the encased microparticles can vary from 1 to several hundred."<sup>34</sup> Appellants strongly disagree with Examiner that Loughman discloses for each drop of first fluid ejected into the second fluid, the result is the generation of a microcapsule in the second fluid as claimed by Appellants. Appellants believe that Loughman discloses multiple microparticles are encased with

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<sup>33</sup> Page 9, lines 29-34

<sup>34</sup> Page 10, lines 5-6

an absorbable encasing copolymer using coagulation of solid microparticles encased in a polymer solution and delivered through an ultrasonic atomizer (nebulizer) into a liquid medium that is a non-solvent for the encasing polymer, where the liquid medium non-solvent is capable of extracting the solvent of the encasing solution about the encased solid microparticles, e.g. there are anywhere from 1 to several hundred core component drops encased in each microparticle. Thus, Appellants argue that the claim limitation "generating a microcapsule in said second fluid for each drop of said first fluid ejected, wherein said microcapsule includes said core component," is clearly not disclosed in Loughman. Therefore, Loughman cannot anticipate Appellants' claimed invention as recited in independent claim 1 and therefore for this reason alone the rejection of independent claim 1 is improper.

In regards to independent claims 46 and 47 and dependent claim 2, each discloses activating a drop on demand fluid ejector. Appellants disagree with Examiner that the ultrasonic atomizer of Loughman generates a drop, hence the ultrasonic atomizer comprises activation of a drop on demand fluid ejector.<sup>35</sup> Examiner goes on to state that any automated ultrasonic atomizer results in ejection of a drop, hence it is considered to comprise a drop on demand fluid ejector.<sup>36</sup> Examiner in the advisory action misconstrues or mischaracterizes Appellants' statements by stating that "using the interpretation provided by applicant, an atomizer can be considered as a drop-on-demand device." Appellants traverse Examiner's statement in the advisory action and clearly have argued against such an assertion. In paragraph 10 on page 3 of Appellants' specification Appellants note that the present invention may utilize various types of drop on demand fluid ejection devices.<sup>37</sup> Appellants elaborated further that thermally activated, piezoelectric, and acoustic activation devices may be utilized,<sup>38</sup> and briefly described the operation of thermal and piezoelectric drop on demand fluid ejectors noting that "the former

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<sup>35</sup> Page 3, item 7 in Final Office Action dated May 31, 2006.

<sup>36</sup> *Id.*

<sup>37</sup> Page 3, paragraph 10 of the specification.

<sup>38</sup> *Id.*

rapidly heats a component in the fluid above its boiling point causing vaporization of the fluid component resulting in ejection of a drop of the fluid. While the latter utilizes a voltage pulse to generate a compressive force on the fluid resulting in ejection of a drop of the fluid."<sup>39</sup> Further, Appellants referred the reader to additional references for more information on various transducers utilized in drop-on-demand fluid ejection cartridges.<sup>40</sup> Appellants note that drop-on-demand inkjet printheads differ from continuous printheads and differ from ultrasonic atomizers in that a physical process is manipulated to momentarily overcome surface tension forces and emit a drop or cluster of drops.<sup>41</sup> The ink supply is not sufficiently pressurized to form a jet.<sup>42</sup> The ink is held in a nozzle, forming a meniscus, or at a surface in a precise location where the ink remains in place unless some other force overcomes the surface tension forces that are inherent in the liquid.<sup>43</sup> Appellants argue that, one of ordinary skill in the art of fluid ejection, would not only not classify or describe an ultrasonic atomizer or nebulizer as a continuous inkjet device, one of ordinary skill in the art clearly would not describe an ultrasonic atomizer as a print-on-demand fluid ejection device. Further, Appellants have described in the specification that "[f]luid ejection device 102 precisely controls in a discretely drop-by-drop manner the ejection of a fluid held in chamber 132 which distinguishes over the ultrasonic atomizer disclosed in Loughman.<sup>44</sup> Thus, Appellants argue that the claim limitation "a drop on demand fluid ejector," is clearly not disclosed in Loughman. Therefore, Loughman cannot anticipate Appellants' claimed invention as recited in independent claims 46 and 47 and dependent claim 2, and therefore for this reason alone the rejection of independent claims 46 and 47 and dependent claim 2, is improper.

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<sup>39</sup> Page 4, paragraph 12 line 29 to page 5 line 4 of the specification.

<sup>40</sup> Page 5, paragraph 12, lines 4-9 of the specification citing *Inkjet Technology and Product development Strategies*.

<sup>41</sup> Stephen F. Pond, Ph.D., *Inkjet Technology and Product Development Strategies*, ch 4, page 90 (Torrey Pines Research, 2000).

<sup>42</sup> *Id.*.

<sup>43</sup> *Id.*.

<sup>44</sup> Page 6, paragraph 13, lines 3-4 of the specification.

Further, in regards to independent claim 46, independent claim 46 also discloses the limitation "producing a distribution of n fluid drop volumes, wherein each drop volume of said n fluid drops is within about 10 percent of a specified drop volume." Appellants disagree with Examiner that Loughman discloses producing a distribution of drop volume where each drop is within about 10 percent of a specified drop volume. Examiner states that the "n drops resulting from the ultrasonic atomizer inherently produces a distribution of n fluid drop volumes, wherein each drop volume . . . [of] said n fluid drops is within about 10 percent of a specified drop volume (Page 9, Line 25 to Page 10, Line 35, Example VII)."<sup>45</sup> Appellants have been unable to find anywhere within Loughman such a disclosure and in particular in Examiner's citation of page 9 to page 10. Appellants traverse Examiner's statement that Loughman discloses such a distribution of drop volumes as claimed by Appellants. Appellants note that Loughman on page 10 does disclose an average diameter of an encased microparticle ranging from 0.5 um to 100um.<sup>46</sup> Appellants assert that such an average range says nothing of the distribution of drop volumes ejected from the ultrasonic atomizer and even in arguendo if Examiner is correct that the average diameter does disclose a distribution the distribution disclosed in Loughman would be greater than 10 percent and therefore distinguishable over Appellants' claimed invention as disclosed in claim 46. Thus, for this reason alone independent claim 46 is separately allowable over Loughman and the rejection of independent claim 46 is improper.

Thus, Appellants assert that Examiner has not provided a *prima facie* case of anticipation because clearly Loughman does not disclose all of the elements/limitations of independent claims 1 and 46-47, and therefore the elements/limitations of independent claims 1 and 46-47 are arranged in a manner distinct from that disclosed in Loughman. Accordingly, rejection of independent claims 1 and 46-47 under 35 U.S.C. §102(b) in respect to Loughman is improper.

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<sup>45</sup> Page 4, item 13 of the Final Office Action dated May 31, 2006.

<sup>46</sup> Page 10, lines 6-7 of Loughman.

In regards to dependent claims 4-6 Examiner argues that it is inherent that "each activation results in the activation of an energy generating element one time, ejecting one drop of first fluid into said second fluid."<sup>47</sup> Appellants as noted and argued above that clearly an the ultrasonic atomizer as disclosed in Loughman is operated in a continuous manner and that activation of the ultrasonic atomizer does not result in the ejection of a drop as disclosed by Appellants in dependent claims 4-6. Thus, for this reason alone dependent claims 4-6 are separately allowable over Loughman and the rejection of dependent claims 4-6 is improper.

In regards to dependent claims 12 and 13 Examiner argues that it is inherent that activation of an "ultrasonic atomizer of Loughman comprises application of an electrical pulse charging a nozzle through which first fluid is ejection, and applying a voltage pulse to deflect a pre-selected number of drops," and for claim 13 the "deflected pre-selected number of drops are ejected into a recirculator."<sup>48</sup> Appellants have been unable to find anywhere within Loughman such a disclosure and Appellants traverse Examiner's statement that such properties are inherent in the operation of an ultrasonic atomizer. Again Appellants assert that Examiner appears to be ignoring what is commonly known in the art. Thus, for this reason alone dependent claims 12-13 are separately allowable over Loughman and the rejection of dependent claims 12-13 is improper.

In regards to dependent claims 17 and 18 Examiner argues that Loughman discloses ejecting a drop of first fluid from a chamber (referred to as homogenizer by Loughman) through one nozzle formed in a nozzle layer.<sup>49</sup> Appellants have been unable to find anywhere within Loughman such a disclosure and Appellants traverse Examiner's statement that Loughman discloses one nozzle formed in a nozzle layer. Thus, for this reason alone dependent claims 17 and 18 are separately allowable over Loughman and the rejection of dependent claims 17 and 18 is improper.

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<sup>47</sup> Page 3, item 7 of the Final Office Action dated May 31, 2006.

<sup>48</sup> Page 3, item 10 of the Final Office Action dated May 31, 2006.

<sup>49</sup> Page 3, item 12 of the Final Office Action dated May 31, 2006.

Thus, in regards to dependent claims 2, 4-8, 11-14, and 17-18, Appellants assert that Examiner has not provided a *prima facie* case of anticipation because clearly Loughman does not disclose all of the elements/limitations of dependent claims 2, 4-8, 11-14, and 17-18, and/or there is no reasoned argument in the record to support Examiner's rejection of several of these dependent claims. Accordingly, rejection of claims 2, 4-8, 11-14, and 17-18 under 35 U.S.C. §102(b) in respect to Loughman is improper.

**B. The combination of Loughman in view of Boucher (U.S. Patent No. 6,641,254, "Boucher") does not disclose, teach, or suggest all of the claim limitations of claims 3, 9-10 and 48.**

Appellants assert that the rejection of claims 3, 9-10, and 48 under 35 U.S.C. §103(a) as being obvious over Loughman in view of Boucher (U.S. Patent No. 6,641,254, "Boucher") is improper.

**i. Prima Facie case of Obviousness**

In order for the Examiner to establish a *prima facie* case of obviousness, there must be (i) some suggestion or motivation, in the prior art itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, i.e. the prior art must suggest the desirability of the claimed invention; (ii) a reasonable expectation of success, and (iii) the prior art references must teach or suggest each element of the claims.<sup>50</sup>

The burden of establishing a *prima facie* case of obviousness can only be satisfied by a showing of some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to

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<sup>50</sup> MPEP §2143.

combine the relevant teachings of the references.<sup>51</sup> Under Section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art also suggests the desirability of the modification.

The law is "clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."<sup>52</sup> The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success.<sup>53</sup>

The Examiner, in the Final Office action, on page 5 and on page 6 item 21, continues to assert that although Loughman fails to teach "that the fluid ejector activation further comprises activation of a thermal resistor or a piezoelectric element" that Boucher does teach that "it is well known in the fluid ejector art to utilize a fluid ejector comprising either a thermal resistor or a piezoelectric element in order to utilize an energy generating element that produces the force necessary to eject the first fluid." Appellants disagree with Examiner that such a combination renders Appellants claims 3, 9-10, and 48 obvious. First, Appellants point out that Loughman is silent on the need for the use of any other energy generating element other than the ultrasonic atomizer. Therefore why would one of ordinary skill in the art go to a reference involving encapsulation of electrical leads to seek an energy generating element that produces the force necessary to eject the first fluid when the device disclosed in Loughman does not appear to have any problems or issues with ejecting the fluid. Likewise one reading Boucher involving the encapsulation of

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<sup>51</sup>See *In re Fritch*, 972 F.2d 1260, 23 USPQ 2d 1780, 1783 (Fed Cir. 1992).

<sup>52</sup> *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (citations omitted).

<sup>53</sup>*Rockwell Int'l Corp. v. United States*, 147 F.3d 1358, 47 USPQ 2d 10127, 1033 (Fed. Circ. 1998).



electrical leads would not be directed to Loughman since Boucher does not teach, suggest, or mention encapsulation of microparticles and does not teach suggest or mention the use of an ultrasonic atomizer or nebulizer. Appellants believe that clearly Examiner is using Appellants' claimed invention as a template and then searching for prior art that has similar wording namely in the instant case encapsulation. Appellants assert that there is simply no justification or motivation to combine the teachings of Boucher with Loughman other than using Appellants claimed invention as a template. Appellants believe the Examiner is incorrectly using Appellants' claimed invention as a template to combine the various elements found in the cited references.<sup>54</sup>

In addition, as stated in MPEP 2141.02, the Examiner must consider the claimed invention 'as a whole'. Further, the Examiner must consider the prior art in its entirety, as stated in MPEP 2141.02. Distilling an invention down to the "gist" or "thrust" of an invention disregards the requirement of analyzing the subject matter "as a whole."<sup>55</sup> In particular Examiner appears to ignore the fact that the cited prior art references solve different problems which are completely unrelated.

When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness.<sup>56</sup> "The factual inquiry whether to combine references must be thorough and searching."<sup>57</sup> It must be based on objective evidence of

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<sup>54</sup> *In re Lintner*, 458 F.2d 1013, 173 USPQ 560, 562 (CCPA 1972).

<sup>55</sup> MPEP 2141.02 citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert denied*, 469 U.S. 851 (1984)

<sup>56</sup> See, e.g., *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors).

<sup>57</sup> *Id.*

record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with.<sup>58</sup> The need for specificity pervades this authority.<sup>59</sup>

In view of the guidance above, Appellants maintain that the Examiner has failed to establish a *prima facie* case of obviousness. More specifically, the Examiner has failed to make **particular findings** as to why the skilled artisan, without knowledge of the claimed invention, would have selected the components cited by the Examiner for combination. In particular, the Examiner's cited motivation for making its various combinations is faulty and misplaced.

The Examiner in the Final Office action, on page 6 item 22 states that it would have been obvious to one of ordinary skill in the art to have utilized the fluid ejector of Loughman with either a thermal resistor or a piezoelectric element of Boucher in order to ensure sufficient force is present to eject the first fluid." Appellants noted above that Loughman is silent on "ensuring sufficient force is present to eject the first fluid," in regards to the ultrasonic atomizer. Appellants argue that Examiner's statement lacks a well reasoned argument predicated on sound technical and scientific reasoning.

Appellant respectfully submits that this motivation is too general and lacking in the type of particularity that is needed to make out a *prima facie* case of

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<sup>58</sup> See, e.g., *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'") (quoting *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998)); *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("teachings of references can be combined only if there is some suggestion or incentive to do so.") (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).

<sup>59</sup> See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed").

obviousness. Accordingly, for at least this additional reason, Appellants assert the Examiner has not established a *prima facie* case of obviousness.

In addition, when an Appellant submits evidence, whether in the specification as originally filed or in response to a rejection, the Examiner must reconsider the patentability of the claimed invention.<sup>60</sup> The decision on patentability must be based upon consideration of all the evidence, including evidence submitted by the Examiner and evidence submitted by the Appellant.<sup>61</sup> A decision to make or maintain a rejection in the face of all the evidence must show that it was based on the totality of the evidence.<sup>62</sup> Facts established by rebuttal evidence must be evaluated along with the facts on which the conclusion of obviousness was reached, not against the conclusion itself.<sup>63</sup> Appellants believe that there is no motivation to combine the references of Loughman and Boucher.

Further, Appellants assert that Boucher is non-analogous prior art since an electronic device including a fluid ejection device that has an electrical connector encapsulated with a polymer enclosing the electrical connector and an inorganic film disposed over the electrical connector provides no teaching suggestion or mention of a method of making microcapsules utilizing a fluid ejector. Because Boucher discloses encapsulating an electrical connector on an electronic device Appellants believe that Boucher is nonanalogous art. Further, other than the mere mention of two different types of fluid ejection devices Boucher is not in any way pertinent to forming microcapsules utilizing a fluid ejector. The process of encapsulation disclosed in Boucher is simply in no way related to encapsulating the core component in Appellants' claimed invention and is in no way related to Loughman's use of an ultrasonic atomizer since Boucher is silent on the use of an ultrasonic atomizer.

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<sup>60</sup> See *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ.2d 1741 (Fed Cir. 1990).

<sup>61</sup> *Id.*

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

Appellants believe that with regard to prior art outside the field of the invention only those arts reasonably pertinent to the particular problem with which the invention is involved are proper prior art references in resolving the question of obviousness under 35 U.S.C. 103.<sup>64</sup> Appellants assert that a reference is reasonably pertinent if it is one which, because of the matter with which it deals, logically would have commended itself to the inventor's attention in considering his problem.<sup>65</sup> If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem whereas if it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.<sup>66</sup> Appellants strongly believe that Boucher in disclosing the encapsulation of an electrical connector is clearly directed to a different purpose. Boucher does not involve any encapsulation of microparticles by ejecting a first fluid into a second fluid. Appellants believe that the question is not whether thermal resistor and piezoelectric fluid ejectors are known, but whether it was obvious to use such fluid ejectors to form microparticles by ejecting a first fluid into a second fluid in light of all the relevant factors.<sup>67</sup> Appellants assert it is insufficient to establish obviousness that the separate elements of the invention existed in the prior art, absent some teaching or suggestion, in the prior art to combine the elements.<sup>68</sup>

In addition, Appellants assert that the suggestion to combine the references must not require substantial reconstruction or redesign of the reference to arrive at the claimed invention.<sup>69</sup> Appellants assert that to combine Boucher with Loughman to obtain Appellants claimed invention would require substantial reconstruction or redesign of Loughman and in fact Appellants assert that to combine or add a thermal

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<sup>64</sup> *In re Wood*, 599 F.2d 858, 26 USPQ 171, 174 (C.C.P.A.) 1979) (citing *In re Antle*, 444 F.2d 1168, 1171-72, 170 USPQ 285, 287-88 (C.C.P.A. 1971).

<sup>65</sup> *In re Clay*, 966 F.2d 656, 23 USPQ 2d 1058, 1060-61 (Fed Cir. 1992)

<sup>66</sup> *Id.*

<sup>67</sup> *See Arkie Lures, Inc. v. Gene Larew Tackle, Inc.* 119 F.3d 953, 43 USPQ 2d 1294 (Fed Cir. 1997).

<sup>68</sup> *Id.*

<sup>69</sup> *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959).

resistor energy generating element to Loughman would make the ultrasonic atomizer of Loughman most likely inoperative or at the very least operate in a manner completely different from that disclosed by Loughman and therefore teaches away from combining the two references. Further, Appellants assert an obviousness rejection cannot be predicated on the fact that one of ordinary skill in the art would have the capabilities to arrive at the invention.<sup>70</sup> Thus, Appellants believe that Boucher is nonanalogous art and is improper as a cited prior art reference in regards to Appellants' claimed invention in view of Loughman

Even assuming for purposes of arguing that Boucher is proper analogous art Appellants assert that Boucher neither discloses operating a fluid ejector at a frequency greater than 10 kilohertz nor generating a microcapsule in said second fluid for each drop of said first fluid ejected as claimed by Appellants in the instant case and as argued above Loughman also does not disclose. Thus, even assuming that Boucher is proper analogous art Boucher does not cure the deficiencies of Loughman.

These errors by the Examiner have resulted in the failure, particularly in the lack of a reasoned argument as required by MPEP §2142,<sup>71</sup> of the Examiner's obligation to perform the duty of establishing a *prima facie* case of obviousness in making a rejection under 35 USC §103.

Thus, in regards to dependent claims 3, 9-10, and 48 Appellants assert that Examiner has not provided a *prima facie* case of obviousness. Accordingly,

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<sup>70</sup> *Ex parte levingood*, 28 USPQ 2d 1300 (Bd. Pat. App. & Inter. 1993).

<sup>71</sup> "When an Appellant submits evidence, whether in the specification as originally filed or in response to a rejection, the Examiner must reconsider the patentability of the claimed invention. The decision on patentability must be based upon consideration of all the evidence, including evidence submitted by the Examiner and evidence submitted by the Appellant. A decision to make or maintain a rejection in the face of all the evidence must show that it was based on the totality of the evidence. Facts established by rebuttal evidence must be evaluated along with the facts on which the conclusion of obviousness was reached, not against the conclusion itself." Citing *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ.2d 1741 (Fed Cir. 1990).

rejection of claims 3, 9-10, and 48 under 35 U.S.C. §103(a) in respect to Loughman in view of Boucher is improper.

**C. The combination of Loughman and Examiner's remarks does not disclose, teach, or suggest all of the claim limitations of claims 15-16, 19-28, and 50-55.**

Appellants assert that the rejection of claims 15-16, 19-28, and 50-55 under 35 U.S.C. §103(a) as being obvious over Loughman in view of Examiner's remarks is improper.

The Examiner in the Final Office action, on pages 7 and 8 (items 28-35) and page 10 (items 41-42 continues to assert that although Loughman fails to teach the claim limitations found in claims 15-16, 19-28, and 50-55 all of these limitations are obvious since they are all either contemplated or envisaged by Loughman.

In regards to claim 15, claim 15 discloses "ejecting said drop of said first fluid into a thin liquid film of said second fluid," and claim 16 discloses "flowing said thin liquid film of said second fluid in a direction perpendicular to a fluid ejection axis of a fluid ejector head." Appellants have previously stated they have been unable to find any teaching, suggestion, or mention in Loughman of such claim elements and limitations. Appellants respectfully requested that Examiner particularly point out in Loughman where such a teaching, suggestion, or mention in Loughman is made. In addition, Appellants traversed Examiner's statement that Loughman would contemplate such claimed elements and limitations. Appellants argued that the Examiner has cited only a single reference in support of the 103 rejection, which requires a high level of correlation between what is described in the cited reference and the claims proffered in the instant application. Appellants asserted that the description in Loughman is insufficient to describe, teach, or suggest the claims of the present application because each and every element and limitation is not explicitly or implicitly stated, unless combined with another reference or the

Examiner's personal knowledge. Appellants requested a "citation of some reference work recognized as a standard in the pertinent art" that supports Examiner's position that Loughman contemplates ejecting a drop of a first fluid immiscible with said second fluid. Appellants requested an affidavit under 37 C.F.R. §1.104(d)(2) if Examiner was relying on Examiner's own knowledge since Examiner did not provide a reasoned explanation of how each of the elements and limitations or group of elements and limitations as claimed subject matter of claims 15-16 is obvious in view of Loughman.

In regards to dependent claims 19-28, Appellants previously asserted that the same arguments apply to these claims as applied to claims 15 and 16.

In regards to claims 50-55 Appellants previously asserted that the same arguments apply to these claims as applied to claims 15 and 16.

As noted above the burden of establishing a *prima facie* case of obviousness can only be satisfied by a showing of some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.<sup>72</sup> Under Section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art also suggests the desirability of the modification. Appellants believe that in order to establish a *prima facie* case of obviousness Examiner must provide some reasoned argument more than simply stating a reference contemplates or envisages a particular claim element/limitation especially when relying on knowledge generally available to one of ordinary skill in the art.

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<sup>72</sup>See *In re Fritch*, 972 F.2d 1260, 23 USPQ 2d 1780, 1783 (Fed Cir. 1992).

These errors by the Examiner have resulted in the failure, particularly in the lack of a reasoned argument as required by MPEP §2142,<sup>73</sup> of the Examiner's obligation to perform the duty of establishing a *prima facie* case of obviousness in making a rejection under 35 USC §103.

Thus, in regards to dependent claims 15-16, 19-28, and 50-55 Appellants assert that Examiner has not provided a *prima facie* case of obviousness. Accordingly, rejection of claims 15-16, 19-28, and 50-55 under 35 U.S.C. §103(a) in respect to Loughman in view of Examiner's remarks is improper.

### **Conclusion**

The Examiner failed to establish a *prima facie* case of anticipation for Appellants' claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49. Appellants have shown that Loughman does not disclose all of the elements/limitations of Appellants' claimed invention and, thus Appellants' claims are arranged in a manner distinct from that disclosed in Loughman. Appellants respectfully request that the Board reverse the Examiner's final rejection and promptly allow claims 1-2, 4-8, 11-14, 17-18, 46-47, and 49.

The Examiner failed to establish a *prima facie* case that Appellants' claims 3 and 9-10 were obvious over Loughman in view of Boucher. Appellants have shown that the combination of Loughman and Boucher taken either individually or in combination do not disclose, teach, or suggest all of the claim limitations. Appellants respectfully request that the Board reverse the Examiner's final rejection and promptly allow claims 3 and 9-10.

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<sup>73</sup> "When an Appellant submits evidence, whether in the specification as originally filed or in response to a rejection, the Examiner must reconsider the patentability of the claimed invention. The decision on patentability must be based upon consideration of all the evidence, including evidence submitted by the Examiner and evidence submitted by the Appellant. A decision to make or maintain a rejection in the face of all the evidence must show that it was based on the totality of the evidence. Facts established by rebuttal evidence must be evaluated along with the facts on which the conclusion of obviousness was reached, not against the conclusion itself." Citing *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ.2d 1741 (Fed Cir. 1990).



The Examiner failed to establish a *prima facie* case that Appellants' claims 15-16, 19-28, and 50-55 were obvious over Loughman in view of Examiner's remarks. Appellants have shown that the combination of Loughman and Examiner's remarks taken either individually or in combination do not disclose, teach, or suggest all of the claim limitations. Appellants respectfully request that the Board reverse the Examiner's final rejection and promptly allow claims 15-16, 19-28, and 50-55.

Appellant respectfully requests the timely issuance of a notice of allowance indicating that claims 1-72 are allowed.

Appellant will defer his decision as to whether or not to request oral argument until after receipt of the Examiner's Answer to this Appeal Brief.

## **8. Claims Appendix**

### **Listing of claims:**

1. (original) A method of making a microcapsule, comprising:  
    activating a fluid ejector at a frequency greater than 10 kilohertz, wherein each activation of said fluid ejector generates essentially a drop, said fluid ejector fluidically coupled to a first fluid including a core component;  
    ejecting essentially said drop of said first fluid into a second fluid, said drop having a volume; and  
    generating a microcapsule in said second fluid for each drop of said first fluid ejected, wherein said microcapsule includes said core component.
2. (original) The method in accordance with the method of claim 1, wherein activating said fluid ejector further comprises activating a drop on demand fluid ejector.
3. (original) The method in accordance with the method of claim 2, wherein activating said fluid ejector further comprises:  
    activating a thermal resistor; and  
    heating at least one component of said first fluid above the boiling point of said at least one component.
4. (original) The method in accordance with the method of claim 1, wherein activating said fluid ejector actuator further comprises activating a fluid ejector energy generating element n times, ejecting n drops of said first fluid into said second fluid, wherein n is an integer.

5. (original) The method in accordance with the method of claim 4, wherein said n drops produce a distribution of drop volumes within 10 percent of a specified volume.

6. (original) The method in accordance with the method of claim 4, further comprising activating said fluid ejector energy generating element at a steady state producing a distribution of drop volumes within 6 percent of a specified volume.

7. (original) The method in accordance with the method of claim 1, wherein said volume of said drop is in the range from about 1 atto-liter to about 100 picoliters.

8. (original) The method in accordance with the method of claim 1, wherein said volume of said drop is in the range from about 1 atto-liter to about 1 picoliters.

9. (original) The method in accordance with the method of claim 1, wherein activating said fluid ejector further comprises activating a thermal resistor.

10. (original) The method in accordance with the method of claim 1, wherein activating said fluid ejector further comprises activating a piezoelectric element.

11. (original) The method in accordance with the method of claim 1, wherein activating said fluid ejector further comprises activating said fluid ejector at a frequency greater than 20 kilohertz.

12. (original) The method in accordance with the method of claim 1, wherein activating said fluid ejector further comprises:

applying an electrical pulse charging a nozzle through which said first fluid is ejected; and

applying a voltage pulse to deflect a pre-selected number of drops.

13. (original) The method in accordance with the method of claim 12, further comprising deflecting a pre-selected number of said drops into a recirculator.

14. (original) The method in accordance with the method of claim 1, wherein ejecting said drop further comprises ejecting said drop a pre-selected distance above the surface of said second fluid.

15. (original) The method in accordance with the method of claim 14, further comprising ejecting said drop of said first fluid into a thin liquid film of said second fluid.

16. (original) The method in accordance with the method of claim 15, further comprising flowing said thin liquid film of said second fluid in a direction perpendicular to a fluid ejection axis of a fluid ejector head.

17. (original) The method in accordance with the method of claim 1, wherein ejecting said drop further comprises ejecting said drop of said first fluid from a chamber through at least one nozzle formed in a nozzle layer, said chamber and said at least one nozzle each having a volume, wherein said volume of said chamber is greater than said volume of said nozzle.

18. (original) The method in accordance with the method of claim 1, wherein ejecting said drop further comprises ejecting said drop of said first fluid from at least one nozzle formed in a nozzle layer.

19. (original) The method in accordance with the method of claim 18, further comprising immersing said at least one nozzle wherein at least a portion of said nozzle layer is below the surface of said second fluid.

20. (original) The method in accordance with the method of claim 19, further comprising flowing said second fluid in a direction perpendicular to a fluid ejection axis of a fluid ejector head.

21. (original) The method in accordance with the method of claim 1, further comprising:

moving said fluid ejector in at least one lateral direction over said second fluid;

activating said fluid ejector at pre-selected lateral locations; and

ejecting essentially a drop of said first fluid into said second fluid at each pre-selected lateral location.

22. (original) The method in accordance with the method of claim 20, wherein moving said fluid ejector further comprises reciprocally translating said fluid ejector over said second fluid.

23. (original) The method in accordance with the method of claim 1, further comprising flowing said second fluid in a thin film in a direction perpendicular to a fluid ejection axis of said fluid ejector.

24. (original) The method in accordance with the method of claim 1, further comprising:

moving said fluid ejector in at least one lateral direction in said second fluid;

activating said fluid ejector at pre-selected lateral locations; and

ejecting essentially a drop of said first fluid into said second fluid at each pre-selected lateral location.

25. (original) The method in accordance with the method of claim 20, wherein moving said fluid ejector further comprises reciprocally translating said fluid ejector in a lateral direction in said second fluid.

26. (original) The method in accordance with the method of claim 1, wherein ejecting said drop further comprises ejecting essentially said drop of said first fluid into a mist of said second fluid.

27. (original) The method in accordance with the method of claim 26, further comprising:

activating a plurality of second fluid ejectors fluidically coupled to said second fluid;

ejecting multiple second fluid drops of said second fluid proximate to said drop of said first fluid; and

generating said mist of said second fluid.

28. (original) The method in accordance with the method of claim 27, wherein said multiple second fluid drops of said second fluid produce a distribution of second fluid drop volumes within 10 percent of a specified second fluid drop volume.

29. (original) The method in accordance with the method of claim 1, wherein ejecting said drop further comprises ejecting said drop of said first fluid having a polyanion, wherein said core component is dispersed in said first fluid.

30. (original) The method in accordance with the method of claim 1, wherein ejecting said first drop further comprises ejecting a drop of a first fluid immiscible with said second fluid.

31. (withdrawn)

32. (original) The method in accordance with the method of claim 1, wherein ejecting said drop further comprises ejecting a drop of a first fluid including said core component and a monomer into a second fluid that includes a co-reactant to said monomer.

33. (original) The method in accordance with the method of claim 32, further comprising reacting said monomer and said co-reactant to form a polymer shell encapsulating said core component.

34. (original) The method in accordance with the method of claim 1, wherein said core component includes hemoglobin.

35. (withdrawn)

36. (withdrawn)

37. (withdrawn)

38. (withdrawn)

39. (original) The method in accordance with the method of claim 1, wherein generating a microcapsule further comprises generating a chitosan alkali metal alginate microcapsule.

40. (original) The method in accordance with the method of claim 1, wherein generating said microcapsule further comprises forming a coacervate.

41. (withdrawn)

42. (withdrawn)

43. (withdrawn)

44. (withdrawn)

45. (withdrawn)

46. (original) A method of making a microcapsule, comprising:  
activating n times a drop-on-demand fluid ejector, said fluid ejector fluidically coupled to a first fluid including a core component, said fluid ejector operated at a frequency greater than 10 kilohertz, wherein each activation generates essentially a fluid drop of said first fluid;  
ejecting essentially n drops of said first fluid into a second fluid producing a distribution of n fluid drop volumes, wherein each drop volume of said n fluid drops is within about 10 percent of a specified drop volume; and  
generating a microcapsule in said second fluid, wherein said microcapsule includes said core component.

47. (original) A method of using a drop on demand fluid ejection device, comprising:  
energizing the drop on demand fluid ejection device;  
ejecting essentially a drop of a first fluid including a microcapsule forming core component into a second fluid; and  
generating a microcapsule in said second fluid, wherein said microcapsule includes said microcapsule forming core component.

48. (original) The method in accordance with the method of claim 47, wherein energizing the fluid ejection device further comprises energizing a thermally activated fluid ejection device.

49. (original) The method in accordance with the method of claim 47, further comprising positioning the fluid ejection device a pre-selected distance above said second fluid.

50. (original) The method in accordance with the method of claim 47, further comprising immersing the fluid ejection device a pre-selected distance in said second fluid.



51. (original) The method in accordance with the method of claim 47, further comprising flowing said second fluid in a direction perpendicular to a fluid ejection axis of the fluid ejection device.

52. (original) The method in accordance with the method of claim 51, further comprising:

moving the fluid ejection device in at least one lateral direction in said second fluid; and

ejecting n drops of said first fluid into said second fluid at n pre-selected lateral locations.

53. (original) The method in accordance with the method of claim 51, further comprising:

moving the fluid ejection device in at least one lateral direction over said second fluid; and

ejecting n drops of said first fluid into said second fluid at n pre-selected lateral locations.

54. (original) The method in accordance with the method of claim 53, wherein moving said fluid ejector further comprises reciprocally translating said fluid ejector over said second fluid.

55. (original) The method in accordance with the method of claim 53, further comprising flowing said second fluid in a thin film in a direction perpendicular to a fluid ejection axis of said fluid ejector.

56. (original) The method in accordance with the method of claim 47, wherein ejecting said drop further comprises ejecting said drop of said first fluid having a polyanion, wherein said core component is dispersed in said first fluid.

57. (original) The method in accordance with the method of claim 47, wherein ejecting said first drop further comprises ejecting a drop of a first fluid immiscible with said second fluid.

58. (withdrawn)

59. (original) The method in accordance with the method of claim 47, wherein ejecting said drop further comprises ejecting a drop of a first fluid including said core component and a monomer into a second fluid that includes a co-reactant to said monomer.

60. (original) The method in accordance with the method of claim 59, further comprising reacting said monomer and said co-reactant to form a polymer shell encapsulating said core component.

61. (original) The method in accordance with the method of claim 47, wherein said core component includes hemoglobin.

62. (withdrawn)

63. (withdrawn)

64. (withdrawn)

65. (withdrawn)

66. (original) The method in accordance with the method of claim 47, wherein generating a microcapsule further comprises generating a chitosan alkali metal alginate microcapsule.

67. (original) The method in accordance with the method of claim 47, wherein generating said microcapsule further comprises forming a coacervate.

68. (withdrawn)

69. (withdrawn)

70. (withdrawn)

71. (withdrawn)

72. (withdrawn)

**9. EVIDENCE APPENDIX**

None presented.

**10. RELATED PROCEEDINGS APPENDIX**

None presented.

Hewlett-Packard Company  
1000 NE Circle Blvd. m/s 422B  
Corvallis, OR 97330  
(541) 715-1694

Respectfully submitted,  
John Stephen Dunfield et al.

By: /Donald J. Coulman/  
Donald J. Coulman  
Reg. No. 50,406  
Attorney for Applicants

Date: 31 October 2006